BANGALORE HEALTHY CITY PROJECT [BHCP]

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M.B.B.S., DPH

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Pioneers of BHCP

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Dr. Dharwad successfully completed 31 years of service in Health and FW Services, Government of Karnataka between June 1975 - May 2006 where he served in various capacities – as a Medical Officer, District Level Programme Officer, District Health and FW Officer, Deputy Director, Joint Director and In-charge Additional Project Director in Health and FW Services, Government of Karnataka.

As a Public Health Expert, he was a member of International and National coverage Evaluation Team (U.I.P). He served as a regional trainer in CSSM & RCH and as guest faculty at Administrative Training Institute, Mysore. He has also contributed as a PIP Core Group Member of Karnataka in preparing NACP-III (National AIDS Control Programme). While in service, he gained honorary experiences by working as a Treasurer and secretary of District Red Cross society in various districts of Karnataka. Was founder, member, secretary and President of Indian Medical Association, Ugar Khurd branch, Belgaum District. In his 31 years of service, Dr. Dharwad promoted public-private partnerships that helped in achieving the *Health for all* goal through Primary Health Care Approach.

He has Received Rajyotsava BEST OFFICER award in ' A ' Category on Karnataka Rajyotsava day 2004 (District Health & FW Officer, Belgaum).

He has won FW State Govt. Awards continuously for 13 years for surpassing the targets set under State FW programme.

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1 INTRODUCTION

In the forty-fourth World Health Assembly, Urban Health was the subject of the technical discussions, there-by recognizing health related crisis in urban areas and giving emphasis about public health thinking and finding its solutions. The urban health concern can be easily recognized by the growth and distributions of population. The population in cities is growing very rapidly& it has been expected that urban dwellers will exceed the number of rural dwellers for the first time in human history.

1.1 URBAN POPULATION GROWTH

This Urban Population Growth is due to two major factors.

1) The movement of rural population into cities.
2) Natural increase of urban population due to over-riding of births over deaths. In developing countries, urban populations are so large that they have outgrown the capacity of surrounding agricultural areas to provide food and raw materials needed by them & they have overloaded natural water systems with human and industrial waste, thus creating a vicious circle of environmental deterioration, reduction in agricultural production, natural disasters & increased landlessness. As a result, there is poverty & ill health in urban areas.

1.2 HEALTHY CITY A BACKGROUND

W.H.O defines a Healthy City, as "The essence for Health is at the root of a city's overall health".

During 1987,Healthy City subject began with WHO guidance. This Healthy City initiative aims to improve the physical, mental, social and environmental well being of the people who live and work in urban areas. This Healthy City programme is a public health approach that builds the well-documented idea that living and environmental

conditions are responsible for health. There are three important strands in the development of healthy city project.

They are

1. Ottawa Charter (1985)-New public health and health promotion.
2. Alma-Ata -Urban primary health care and health system.
3. Local government as a main developmental force and key player in health and environment. The healthy city programme has an important role for the health sector in relation to improving living conditions and addressing environment issues in urban development. The united nation's conference on environment and development held in 1992 at Rio-de-Janeiro has stated importance of local governments in development and their main role in health and environment.

According to WHO, the qualities of Healthy City are-

1. A clean, safe physical environment of high quality (including housing quality).
2. An ecosystem that is stable now and sustainable in the long term.
3. A strong, mutually supportive and non-exploitative community.
4. A high degree of participation and control by the public over the decisions affecting their lives, health and well-being.
5. The meeting of basic needs (for food, water, shelter, safety at home and at work) for all the city's people.
6. Access to a wide variety of experiences and resources with the chance for a wide variety of contact, interactions and communication.
7. A diverse, vital and innovative city economy.
8. The encouragement of connectedness with the past, with the cultural and biological heritage of city dwellers and with other groups and individuals.
9. A form that is compatible with and enhances the preceding characteristics.
10. An optimum level of appropriate public health and sick care services accessible to all.
11. High health status (high levels of positive health and low level of disease.)

Considering the above mentioned, Bangalore Healthy City initiative has been promulgated on promotive and preventive health care in urban settings through healthy life style clinic (HLC), an initiative of CAMHADD/WHO/India office in collaboration with WHO and Tri-Sector Partners.

1.2.1 CAMHADD

The Commonwealth Association for Mental Handicap and Developmental Disabilities was established in United Kingdom in 1983 with support from commonwealth foundation. CAMMHAD'S priority programmes are,

1. Training of health care workers at primary care level on the basic principles on maternal health, emergency obstetric care, safe delivery, post partum care, neonatal resuscitation and new-born care to prevent brain damage due to birth asphyxia to prevent mental, neurological and sensory handicaps.
2. CAMHADD with WHO, co-sponsors regional workshops on preventive health.
3. In collaboration with WHO, preventive and promotive aspects due to birth asphyxia, cerebrovascular, cardiovascular diseases and oral health programmes for preventing disabilities.
4. Working closely with WHO, government, civil society and private sector partnership building on health.
5. Play the leadership role in promoting broad works of WHO to other Commonwealth institutions in health, education and development sectors.

CAMHADD has initiated Bangalore Healthy City Initiative on promotive and preventive health care for low and middle income group population of Bangalore city focusing on prevention of hypertension, diabetes and oral health with WHO technical collaboration and with Tri-sector (government, private-public sectors and civil society) partnership which has become a success story.

In collaboration with the following global partners, occupational health programme---straighten-up India, Bangalore and safety at work to prevent occupational health hazards, has been in progress since January 2003.

1. Child and adolescent health and development cluster of the World Health Organization (WHO)

2. Occupational and environmental health: department of protection of the human environment world health organization (WHO)
3. Solve educational programme: health promotion and well-being at work cluster-international labour organization (ILO) Geneva (Switzerland)
4. Life university college of chiropractic Marietta, Georgia (USA)
5. Life chiropractic college west Hayward, CA USA
6. Chiropractic diplomatic corps (CDC) Canada.

1.3 BHCP A BACKGROUND

Bangalore is the fifth largest agglomeration in India & Bangalore Mahanagar Palike is the fourth largest metropolitan corporation in India. Even as Bangalore has advanced in economic progress, attaining immense stature as one of the bustling information technology hubs of the world, so have it's problems—a surge in population, rising health problems and the deteriorating quality of it's environment. Hence, health has become an issue of great importance since the past few years for the BMP and Bang lore's citizens. As part of its efforts to better the quality of life in the city, the issues concerned with the "Healthy City Project" were deliberated upon in a number of meetings organized by BMP. In order to develop Bangalore as a model healthy city, a Healthy City Summit was organized on February 23 and 24, 2004,as a continuation of the earlier deliberations held in Bangalore on December 27 and 28, 1994. As the CAMHADD initiative to develop Bangalore as a model healthy city jointly with Bangalore Mahanagar Palike (BMP) when Mr. Srinivas Murthy, IAS was the Commissioner of BMP, as an outcome of citizens governance programme: Tri-sector Dialogues Bangalore, Tri-sector Dialogue on Preventive Health Care for Urban Poor in January 2003 supported by the Commonwealth Foundation London. And Bangalore Healthy City Summit in February 2004.The success story is to develop promotive and preventive health care in urban setting for low and middle income group of population by establishing centers of excellence with WHO Technical Co-operation in association with Tri-Sector (Government, Public/Private Sectors and Civil Society) Partners. Straighten up India Bangalore and Spinal Scoliosis Screening Workshops were held at Bangalore and

Hubli with help from Dr. V.R. Pandurangi, Founder, Emeritus Secretary General, CAMHADD and Dr. Michel Tetrault, Executive Director of Chiropractic Diplomatic Corps (CDC) Canada. This CDC has provided funds for developing chiropractic service in Bangalore Healthy City Project.

2 PROFILE OF BANGALORE

2.1 TOPOGRAPHY

The city of Bangalore is situated on a ridge point, which divides the region into two distinct river valleys, i.e., south Pennar basin sloping towards east and Vrishibhavati valley sloping towards Southwest. The geographic location of the city ensures that there is no chance of flooding except in case of man-made interruption to the flow of the rainwater. Bangalore is the fifth –largest city in India.

Altitude: 931 meters from the sea level
Latitude: 12 x 58 north
Longitude: 77 x 30 east
Average annual rainfall: 1217.54 mm
Average temperature: 26 c
Humidity: 60 to 70 percent

2.2 BANGALORE DEMOGRAPHICS

2.2.1 Overview

Bangalore City, known as the Silicon Valley of India, is the fifth-largest Urban Agglomeration in the country. The city is growing rapidly and competes with the leading techno-knowledge cities of the world today.

The local self-government institutions in Bangalore Urban Agglomeration (BUA) comprise Bangalore Mahanagara Palike (BMP), seven City Municipal Councils (CMCs) and one Town Municipal Council (TMC). The jurisdiction of BMP is about 226 sq.km with 4.3 million people.

Out of Rs.12, 856 of annual budget of BMP for 2004-2005, about 55 percent is earmarked for development work. For the same year, a budget of Rs.1614 million has been allocated exclusively for the upliftment of the urban poor and Rs.1; 253.8 million has been allocated for health care programmes.

2.2.2 Population Growth

Bangalore, a tiny village during the 15th century, became Bangalore Urban Agglomeration in 2001, inhabited by 5.75 million population. The city expanded from 151 sq.km in 1991 to 226.2 sq.km in 2001. The rapid growth of Bangalore may be attributed to the increase in area of the city owing to urbanization of rural settlements surrounding the city and phenomenal growth of the core city itself due to incorporation of surrounding areas continuously over the years.

Bangalore city has experienced rapid strides in industrialization since 1951 which resulted in the opening up of employment opportunities in various fields such as construction, business, medicine, education, etc. inviting migrants, both from within and outside the state. Due to the rapid expansion of the IT industry in Bangalore, it is now renowned worldwide as the "Silicon Valley of India".

The population density of Bangalore Urban Agglomeration is approximately 10,712 persons per square kilometer as per 2001 Census; where as the density in BMP is 19,032 persons per square kilometer. The sex ratio is 907 females per 1000 males as per 2001 Census.

The decadal growth of population from 1991 to 2001in Bangalore is the second highest (37.69%) in the country, next only to Delhi (51.93%).

2.2.3 Population Characteristics of BMP & BUA

Description	BMP	BUA
a. Population (Million)	4.3	5.7
b. Sex Ratio (Females/1000males)	918	907
c. Child pop. Between 0-6 years (lacs)	4.57	
d. Literacy rate (%)		
i. Male	89.7	89.1
ii. Female	81.1	79.7
e. Density (persons per sq. km).	19032	10712
f. Average household size	4.54	4.46

The main vital statistics of BMP, BUA, and Karnataka Urban are presented in the following table.

Parameters	BMP	BUA	Karnataka Urban
Population	4.3 million	5.7 million (2001)	--
Slums	0.8 million	1.3 million (2001)	--
Percentage of urban poor	--	23 (2000)	--
Average monthly household Income	--	Rs9, 669 (2000)	--
Crude birth rate	--	20.85 (2002)	18.8
Crude death rate IMR/1000 live births	-- 53(urban slums) (1997)	7.18 (2002) --	5.7 25 (2002)
MMR/1000 live births	--	--	1.95 (2001) UNICEF
Couple protection rate (%)	--	57 (urban slums)	60.26 (2003)
Life expectancy (Years)	--	--	61.7 (1996-2001)
Vehicles per household	--	1.8(2004)	--

2.3 ECONOMIC PROFILE

Nearly one-third of households in Bangalore are in high-income group category, and only five percent comes in EWS .Per capita income is about Rs 1845 per month.

Distribution of Estimated Number of Households by Economic Groups

Economic group *Average household monthly income* (Rs.)	**Estimated Number of Households**		**Average monthly Income (Rs.)**
	Number	**Percentage**	
EWS-<2500	49,379	4.5	1,991
LIG-2501 to 5500	2,04,149	18.5	4,175
MIG-5501 to 10000	4,82,735	43.7	8,283
HIG->10000	3,69,237	33.3	15,457
Overall	**11,05,500**	**100.0**	

Distribution of Workers and Non-workers in Bangalore (2001)

	Workers	**Main workers**	**Marginal Workers**	**Non-workers**
Total	38.6	36.4 %	2.2 %	61.4 %
Male	58 %	55.4 %	2.6 %	42 %
Female	17 %	15.4 %	1.7 %	82.9 %

Proportion of cultivators, Agricultural Labourers, Household Industry and other Workers in Bangalore Urban (2001)

	Cultivators	**Agricultural**	**Household**	**Other Workers**
Total	0.3 %	0.2 %	2.3%	97.2 %
Male	0.3 %	0.2 %	1.6 %	97.9 %
Female	0.3 %	0.4 %	5.1 %	94.2 %

2.4 ACCESS OF AMENITIES TO URBAN POOR

2.4.1 Urban Poor—A Profile

There are an estimated one billion urban poor within the BMP area, which is more than 20 percent of the total population of the city. About one-third of the slum inhabitants live below the poverty line, i.e. on a monthly household income of less than Rs.2500 (US$55.5) under deplorable service conditions. Further, the literacy rate among the urban poor is below the overall rate at the city level and the female literacy rate is lower than that of the male.

2.4.2 Type of families:

Nuclear families	68 %
Extended families	28 %
Joint families	4 %

2.4.3 Community distribution of households by religion in urban slums:

Hindu: SC/ST	35 %
Hindu: Others:	40 %
Muslims	17 %
Christians	7 %
Others	1 %

2.4.4 Comparison in Services for all Income Groups Vs Urban Poor

Services	Percentage of households					
	Urban poor				All Income Groups	
	Economically Weaker		Low Income Group			
	1991/92	2001	1991/92	2001	1991/92	2001
1.Private/exclusive toilets	20.4	35.8	42.2	73.7	54.8 C	89.6
2.Exclusive bathroom	*	77.7	*	97.1	*	98.2
3. Exclusive water tap	6.1	38.8	17.8	56.3	44.0C	69.8
4. Electricity connection	19.6++	97.0	19.6++	99.3	54.7C	99.5
5.House owned	*	46.3	*	58.8	42.5	63.9
6.Kutcha (temporary structures)	26.3	11.9	13.6	1.1	3.1	1.3
7. Approach road to housing by gravel /mud /kutcha road	38.8++	22.4	38.9++	24.5	*	11.0
8.Persons per room	*	2.9	*	2.0	2.4	1.8

2.4.5 Access to Basic Amenities for the Urban Poor in Bangalore

Amenity	Percentage of Slum Households without Access
Water supply	25.8
Toilets	72.2
Drainage	62.8
Street lights	42.7
Balwadi	94.0
Anganwadi	81.4
Primary schools	84.5
Medical facility	78.8

3 HEALTH IN BANGALORE

3.1 HEALTH FOR ALL

At the joint Conference of W.H.O.-UNICEF in1978 at Alma-Ata, the governments of 134 countries and a large number of NGOs called for a revolutionary approach to health care by proclaiming Primary Health Care as a way to achieve 'Health for All by 2000 A.D.'. In September 2000, representatives from 189 countries met at the Millennium Summit in New York and adopted United Nations Millennium Declaration. This is widely referred to as 'Millennium Development Goal'. This Goal places Health at the heart of the overall development of the country.

The Alma-Ata conference defined primary health care as follows.

Primary health care is essential health care made universally accessible to individuals and acceptable to them, through their full participation and at a cost the community and country can afford.

3.2 ELEMENTS OF PRIMARY HEALTH CARE

1. Education concerning prevailing health problems and the methods of preventing and controlling them.
2. Promotion of food supply and proper nutrition.
3. An adequate supply of safe water and basic sanitation.
4. Maternal and child health care including family planning.
5. Immunization against major infectious diseases.
6. Prevention and control of locally endemic diseases.
7. Appropriate treatment of common diseases and injuries.
8. Provision of essential drugs.

With this Primary Health care approach, Health for all is defined as:

" Attainment of a level of health that will enable every individual to lead a socially and economically productive life."

So, the urban health problems can be solved based on primary health care for delivering the goods to reach health for all.

3.3 PRESENT HEALTH CARE SYSTEMS IN BANGALORE

3.3.1 Health care services provided by state government

According to constitution of India, health is a state responsibility. The government of Karnataka has established a Health University –Rajiv Gandhi University of Health Sciences. For providing comprehensive health care services to the people of Karnataka, the state government is running a number of major hospitals, PHCs, CHCs, Dispensaries, and UFWCs to provide primary, secondary, and tertiary level care for the citizens of Bangalore. The numbers and names of health facilities are as follows.

Number of Health Facilities run by State Government in Bangalore

Sl. no	Health facility	Number	Number of beds
1.	Hospitals	12	4,327
2.	Indian System of Medicine	7	371
3.	Primary Health Centers	31	412
4.	Primary Health Units	42	35
5.	Allopathic Dispensaries	65	-
6.	Dispensaries of Indian System of Medicine	11	-
7.	Urban Family Welfare Centers	47	-
8.	Sub-centers	140	-

3.3.2 Major Hospitals run by the Sate Government in Bangalore Urban Area

Sl. No	Name of hospital	Bed strength	Services provided
1.	Victoria hospital	NA	Secondary & tertiary-level health care
2.	Vani Vilas Hospital	NA	MCH and FP services
3.	Bowring & Lady Curzon Hospital	NA	Secondary & tertiary-level health care
4.	KC General Hospital	NA	Secondary & tertiary-level health care
5.	Jayanagar General Hospital	NA	Secondary & tertiary-level health care
6	Ghousia Hospital	NA	MCH & FP services

3.3.3 Tertiary –level Care Hospitals run by the State and Central Government

Sl. No.	Name of Hospital	Bed Strength	Services Provided
1.	Sri Jayadeva Institute of Cardiology	NA	Cardio-vascular disease care
2.	National Institute of Mental Health & Neurosciences (NIMHANS)	NA	Care of neurological, psychiatric disorders& accident and trauma care
3.	Kidwai Memorial Institute of Oncology	NA	Cancer treatment
4.	Sanjay Gandhi Accident and Trauma Complex	NA	Accident and trauma care
5.	Indira Gandhi Institute of Child Health	NA	Child health services

These institutions not only provide secondary and tertiary- level healthcare services to the citizens of Bangalore and Karnataka but also act as referral centers for patients from other states and neighboring countries.

3.3.4 Health Care Services provided by BMP

BMP provides preventive, promotive and curative services to the citizens of Bangalore through a number of maternity homes, UFWCs, dispensaries and sub-health offices.

3.3.5 Health Care Systems in Bangalore

Organizations	Facilities		No. Of Institutions
BMP	Urban family welfare centers		68
	Maternity hospitals		23(bed strength: 526)
	Referral hospitals		6 (bed strength: 180)
	Dispensaries	Allopathic	22
		Ayurvedic	1
		Unani	1
State Government	Major hospitals		3
	Maternity hospitals		2
	Unani		
	Ayurvedic		
Health Insurance Schemes	ESI		
	CGHS		
Other Agencies	Defense services		2
	Air force		1
	Railways		1
Private Sector: Major Hospitals & nursing homes	Allopathic treatment with specialization &diagnostic labs		250
Private Medical Practitioners			5000

3.3.6 Medical Education Institutions

Other institutions	Government	Private
Medical colleges	1	6
Dental colleges	1	12
Nursing colleges	1	16
Pharmacy colleges	1	12
Physiotherapy colleges		13

3.3.7 Health Services by Private Agencies

There are about 250 private hospitals and nursing homes and about 5000 registered private practitioners.

Major private institutions are:

Manipal Hospital and Heart Foundation, Sagar Apollo, Mallya Hospital, Narayan Hrudayalaya, Bangalore Hospital, Lake-view Hospital, Wockhardt, Bangalore Kidney Foundation, and St. John's, St. Martha's, and St. Philomena's hospital. Many of these hospitals have acquired fame and credibility nationally and internationally.

3.3.8 Health Insurance Scheme

It is at present limited to industrial workers and their families. The Central Government Employees are covered by Health Insurance under Central Government Health Scheme.

3.3.9 ESI Scheme

Under this scheme, employees are provided with medical care in cash or kind.

Other Central Government Agencies are --Defense, Air force, and Railways.

3.4 UTILIZATION OF HEALTH CARE SERVICES

As per endline survey of IPP 8, MAY 2002, health facilities provided under IPP 8, were utilized by 45 %of the urban slum population for antenatal checkup, 29 %for postnatal care and 46.5 % for infant care whereas only 13 % of the population utilized medical care facilities provided by the Corporation and the State Government.

The reasons attributed for not utilizing medical care facilities provided by the Corporation and the Government were:

- Care is not good: 31.5 %
- Facilities available not known: 13.6 %
- Non-availability of medicines: 13.6 %
- Timings are not suitable: 10.4 %

3.5 INTERVENTION UNDER BHCP

In order to bridge the gaps in providing healthcare services and to improve utilization of services, the Corporation should adopt a Quality Assurance and Grievances Redressal mechanism to develop trust and rapport between healthcare seekers and providers.

We have to consider the National Health Policy goals along with their time frame for making Bangalore as a Healthy City. The National Health Policy Goals are as follows.

3.6 NATIONAL HEALTH POLICY-2002

Goals to be achieved by	**2015**
Eradicate Polio and Yaws	2005
Eliminate Leprosy	2005
Eliminate Kala-azar	2010
Eliminate Lymphatic Filariasis	2015
Achieve zero level growth of HIV/AIDS	2007
Reduce mortality by 50 % on account of TB, Malaria and other vector and water borne diseases	2010
Reduce prevalence of blindness to 0.5 %	2010
Reduce IMR to 30/100 and MMR to 100/lakh	2010
Increase utilization of public health facilities from current level of <20 % to > 75 %	2010
Establish an integrated system of surveillance, National Health Accounts and Health Statistics	2005
Increase health expenditure by government as a % of GDP from the existing 0.9 % to 2.0 %	2010
Increase share of central grants to constitute at least 25 % of total health spending	2010
Increase state sector health spending from 5.5 % to 7 % of the budget	2005
Further increase to 8 % of the budget	2010

3.7 DEVELOPMENT ACTIVITIES & DEPARTMENTS

There are many organizations and institutions involved in the overall development of Bangalore. These can be broadly classified into two classes.

1. Bangalore Mahanagara Palike
2. Other Departments and Agencies

3.7.1 Other Departments & Agencies

Health cannot be provided by Health Department alone. The other agencies also contribute towards urban health in Bangalore. The following other agencies are functioning directly or indirectly towards Bangalore's Health.

1. Bangalore Water Supply and Sewage Board
2. Karnataka Housing Board
3. Karnataka Slum Clearance Board
4. Directorate of Health and Family Welfare
5. Bangalore Development Authority
6. Bangalore Metropolitan Region Development Authority
7. Bangalore Metropolitan Transport Corporation
8. Directorate of Social Welfare
9. Directorate of Women and Child Welfare
10. Karnataka Pollution Control Board
11. Karnataka Meat & Poultry Marketing Corporation
12. Karnataka Police Department
13. Karnataka Compost Development

3.7.2 Voluntary Institutions & NGOs

Involvement of NGOs in health care sector is a well-known fact. BMP has already conducted workshops with assistance from CAMHADD & Jayadeva Institute of Cardiology towards private-public partnership, esp. about health care to urban poor.

3.8 PROJECTS TAKEN BY TRI-SECTORS

3.8.1 1 BATF-- Bangalore Agenda Task Force

BMC has constituted BATF involving Civic Stake Holders, Private Corporate Sector and NGOs. Its objectives are:

-Swachha (clean) Bangalore

-Nirmala Bangalore toilets

-Fund-based accounting system

-Consultancy for Central Area Traffic Management Project

-Co-ordination with BMP for self-assessment (SAS) scheme for house tax payment

3.8.2 2 Other Tri-sector Projects

Project for School Health Programme Activities

A collaborative venture between BMP, CAMHADD, and international Baccalaurate School.

Preventive health care for Pour-Karmikas in collaboration with CAMHADD.

Preventive health care project for urban poor in Mattikere and Yeshwantpur areas.

The BMP is already coordinating with the following Private Health Organizations and NGOs.

1. **R.V.Dental college**: Providing free oral health services
2. **The Lion's West Eye Hospital:** Conducting free cataract surgeries

3. **The Diabetes Club of Bangalore:** Screening, Investigation, Treatment, and follow up for diabetic patients.
4. **Swabhimana**: Environment sanitation
5. **Samraksha**: An NGO providing for counseling care and support in reproductive and sexual health.
6. **Swacha Bangalore:** Environmental sanitation
7. **Sumanhalli**: Leprosy detection, treatment & rehabilitation
8. **Chinmaya Hospital, Indiranagar:** Preventive, curative and social welfare services
9. **Sucha Bhavan Education & Welfare Center:** MCH, Nutrition and school health
10. **Deena Seva Sangha Ashram:** school health and health education
    Family welfare association of India: MCH &FW services
11. **Sumangali Sevashrama:** running daycare centers, school health programmes for female school dropouts
12. **BOSCO Yuva Sangha**: rehabilitation of street children
13. **Karnataka Health Promotion Trust** : (aided by Bill and Melinda Gates Foundation and university of Manitoba). This trust works for the key population like CSWs, MSMs, and Eunuchs towards prevention of HIV/AIDS.
14. **Karnataka state Aids Prevention Society.**
15. **Red cross society of India (state & dist. branch)**
16. **Rotary, Lion, etc.**
17. **Indian Medical Association**

3.9 INTER SECTORAL COORDINATION

Healthy city plan must consider all these above mentioned stake holders, public and private, working in different areas to come together in delivering the goods like preventive, curative, promotive, and rehabilitative health of urban poor and slum dwellers.

3.10 MORBIDITY & MORTALITY DUE TO DISEASES IN BANGALORE

The Communicable diseases like Acute Respiratory Infection, Tuberculosis, Gastro-enteritis and Cholera, Dengue fever, Malaria, recent epidemic of Chikun-Gunya, HIV/AIDS, & Rabies are showing an increasing trend. This disease wise reports are only available from government and BMP hospitals. The private practitioners and hospital reports are not included. Therefore, the morbidity and mortality reports are not entirely correct at present.

The Non-Communicable diseases like Cardio Vascular diseases, Hypertension, Rheumatic Heart disease, Diabetes Mellitus, Cancer, and mental diseases are showing an increasing trend.

The adolescent & youth problems like STDs, HIV/AIDS & unwanted pregnancies are on the rise. Rising trends of Tobacco, Alcohol. & Drug abuses are also noticed esp. in slum dwellers.

4 BHCP AREA OF ACTION-STRENGTHING HEALTH CARE DELIVERY SYSTEM

In this section, the two important components are

1. Establishments of primary health centers for each ward in BMP area.
2. Strengthening health management and information system. (HMIS)—compilation and utilization of data of government, BMP and private hospitals.

4.1 ESTABLISHMENTS OF URBAN PHC & ITS ACTIVITIES

The functions of the urban health centers must cover the following essential elements of primary health care as outlined in Alma-Ata declaration.

1. Curative Services
2. RCH including Family Planning and Immunization Services
3. Safe water supply and basic sanitation
4. Prevention and control of locally endemic diseases
5. Collection, utilization, and reporting of vital statistics of its area
6. Education about health and RCH
7. Effective implementation of all National Health Programmes
8. Proper referral services
9. Conducting training of outreach workers and health workers
10. Basic laboratory services

Thus established urban PHCs have to serve a population from 35,000 to 60,000, which is actually every wards population.

These PHCs apart from conducting clinical services have to identify sub-center type services by their respective Para medicals including slum areas.

Apart from this, the MOH PHC has to identify special sites in their slum areas for conducting RCH clinics and general sub center clinics according to the convenience and timings of slum dwellers. MOH has to conduct such clinics with assistance from ANMs

and other outreach workers like community health guides, link workers, and trained Daies, at least once a week.

For providing comprehensive health care with special emphasis on the urban poor, the following BMP Health Institutions have to be converted into Urban PHCs in a phased manner.

1. 23 Maternity Hospitals
2. 6 Referral Hospitals
3. 68 Urban FW Centers
4. 22 Allopathic Hospitals

4.2 REFERRAL SERVICES

For effective implementation of primary health care services, there must be provision of correct referral services including follow-up and rehabilitative services. For MCH services, referral hospitals have to be identified with regards to following services.

1. Availability of specialists' services
2. Availability of blood bank or blood storage services.
3. Proper maintenance records and registers.
4. Services of anesthetists and surgical services round the clock.

It has been suggested to have MoU with some of the tertiary care hospitals like

1. Jayadeva Institute of Cardiology- early detection and management of cardio-vascular diseases.
2. National Institute of Mental Health and Neurosciences- treatment of head injuries and other neurological problems.
3. Sanjay Gandhi Accident Complex- treatment of accident and trauma cases.
4. Indira Gandhi Institute of Child Health- emergency child health care services
5. Kidwai Memorial Institute of Oncology- treatment of carcinomas

4.3 EMERGENCY SERVICES

About 700 to 800 deaths take place per year due to road accidents in and around Bangalore. Therefore, for providing needy emergency services, ambulance services have to be provided to each referral hospital coming under BMC, apart from Government, NGOs and Police department's emergency care vehicles.

For making referral services cost effective and positive result oriented, proper record maintenance like referring patients with well designed referral slips and maintenance of separate referral registers has to be established.

4.4 STRENGTHENING OF MCH SERVICES

In this, children under the age of 5 years, women in the reproductive age group (15-44yrs) comprise about 32 % of the total population of India. Therefore, they have to be provided with curative, preventive, and social aspects of obstetrics, pediatrics, family welfare, nutrition, child development and overall health education. Therefore, all the health institutions coming under BMP areas like urban PHCs, referral hospitals, have to deliver following services with public private partnerships.

1. Every year, the urban health centers have to conduct community needs assessment (CNA) activities through their health workers duly involving the respective corporaters and local leaders including mother and child welfare department's officials and NGOs, according to RCH guidelines. In this, they have to determine their own targets for FW services, immunization, nutritional supplements like IFA tablets and vitamin A, STD's prevalence and their treatment.
2. Early ANC registration and their follow up services.
3. Conducting hospital based and outreach based RCH clinics wherein MCH services like immunization FW, nutrition and health education services are specially provided at least once a week at a fixed center.

4. Providing overall health education about MCH services—like MTP services, PNDT (Prenatal Sex Determination) awareness and services regarding Polio eradication.
5. Prevention of food adulteration act 1954 and its implementation in BMP area.

This act was enacted by our parliament in 1954. It was further amended in 1964, 1976,and lately in 1986.Now it is a stringent act, a minimum imprisonment of 6 months with a minimum fine of Rs.1000 is envisaged under this act for cases of proven adulteration, where as for the cases of adulteration which may render the food injurious to cause death or any such harm which may amount to grievous hurt, (within the meaning of section 320 of IPC), the punishment may go up to life imprisonment and a fine which shall not be less than Rs.5000.With the amendment 1986, the consumer and the voluntary organizations have been empowered to take samples of food.

Even though it is a central act, its effective implementation has to be carried out by the State Government and local bodies like BMP in their respective areas. For which Directorate of Health and BMP health officer has to organize training activities to food inspectors and local health authorities identified by the state Health and FW department. For this act's effective implementation, food inspectors of the government and BMP have to strive hard for the detection of adulterated food items and for the same, the awareness campaigns have to be conducted by the respective health officials and Para medicals including food inspectors. It is also stressed that the voluntary agencies, consumer guidance societies can play a vital role.

At present, the food inspectors working in BMP area are:
It is suggested that one food inspector may be allotted five wards of the BMP area for its vigorous implementation and one health officer nominated as PFA act implementation authority or local food authority for every 10 wards. These officials can be identified among the senior health officials working in BMP hospitals. Here every food inspector has to be given a target of say, 25 to 50 sample collections per month.

4.5 THE PRE-NATAL DIAGNOSTIC TECHNIQUES

(Regulation and Prevention of Misuse Act, 1994)

An act to provide for the regulation of the use of pre-natal diagnostic techniques for the purpose of detecting genetic or metabolic disorders or chromosomal abnormalities or certain congenital malformations or sex linked disorders and for the prevention of misuse of such techniques for the purpose of pre-natal sex determination leading to female foeticide and for matters connected there with or incidental there to.

Noting very low sex ratio i.e. in BMP area- 918 and in BUA –907, the alarm bell is ringing quite loudly regarding the female foeticide in BMP area. Even though this act's implementation authority is District Health and FW officer Bangalore, the BMP health officials and their para medicals have to play a pivotal role towards prevention of female foeticide related activities through health education, and conducting special campaigns ward wise with the greater involvement of elected representatives, religious leaders, and inter- related departments like youth affairs, social welfare & women and child welfare.

Under this act, all the hospitals and nursing homes using ultra sonographic techniques have to be registered with District Health & FW officer of Bangalore. Even fertility clinics have to be registered, as it is possible to determine the sex of the foetus even at preconception stage.

At present in Bangalore, the total number of PNDT registered hospitals and genetic clinics & laboratories and mobile ultrasonographic clinics are 790.

4.6 THE MEDIAL TERMINATION OF PREGNANCY

In Bangalore, especially among urban poor, a large number of illegal abortions are being conducted by quacks and other personals thereby helping to increase maternal morbidity and mortality. The government of India legalized abortions by enacting medical termination of pregnancy act passed by our parliament in 1971. The MTP act of 1971 lays down the conditions like:

1. The conditions under which the pregnancy can be terminated.
2. The person or persons who can perform such terminations
3. The place where such terminations can be performed

The conditions under which a pregnancy can be terminated under MTP act 1971 are

a. medical,
b. b. eugenic,
c. c. humanitarian,
d. d. socio-economic,
e. e. failure of contraceptive methods.

Rules and regulations framed in1971 act were altered in October 1975 to eliminate time consuming procedure involved and to make services more readily available. These changes have occurred in three administrative areas.

1. **Approval by board:** Here the District Health and FW officer is empowered to certify the nursing homes duly considering the doctor's specialization and experience.
2. **Qualification required to do abortion:** Rule allows registered medical practitioners to qualify through on the spot training, if he/she has assisted a registered medical practitioner in the performance of 25 cases of MTPs in an approved institution.
3. **The place where abortion is performed:** Under the new rules, non-governmental institutions may take-up abortions after obtaining a license from the Dist. Health and FW officer.

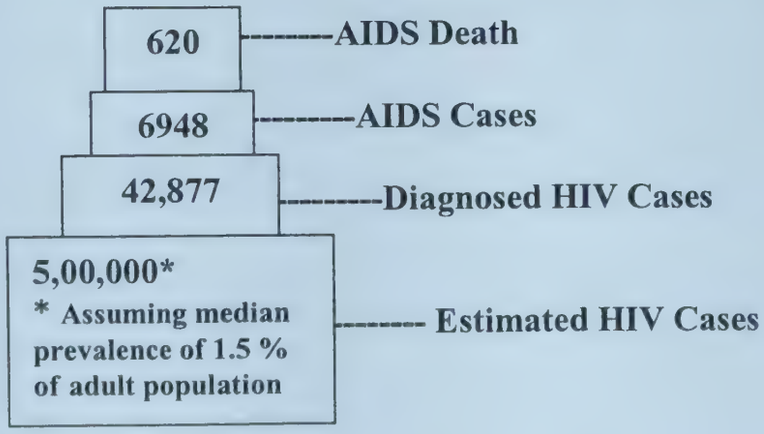
4.7 ACTION BY BMP HEALTH OFFICER

1. The health officer can arrange MTP training activities to all the medical officers (at least one MOH from each hospital and urban PHCs.)
2. Obtaining license for all these hospitals from the district level registration committee headed by the Dist. Health and FW officer
3. Providing necessary surgical instruments and equipments to these MTP recognized hospitals
4. Popularizing these MTP institutions through IEC activities especially in slum areas

4.8 CONTROL OF HIV/AIDS

Karnataka is one amongst the six high prevalence states in India with more than1 % prevalence among ANC attendees and 5 % among high risk group. It is estimated that five lakh persons are living with HIV in the state. The present 2005 sentinel surveillance of HIV suggests prevalence rate of 1.6 %.

Karnataka Burden of Diseases
Based on Reported Figures (vctcs): 1987-February- 05



- Among 6,22,354 tested, 42,877 found to be HIV positive as at the end of Feb.2004.
- 38% of the HIV +ve cases are found to be women.
- Children below 14 years found to be +ve is around 4.0 %
- HIV +ve Female children are around 44% of the total number of positive children.

4.9 PRESENT BANGALORE CITY SCENARIO IN HIV

Bangalore city is the capital of Karnataka state .The city has expanded vastly in all proportions- population, area occupied, industrial development and availability of Govt. and private health care facility. A comprehensive chart of Bangalore Urban and Rural Taluka is put up as follows.

Heading	Bangalore Urban	Bangalore Rural
Population	65.37 Lakhs	18.81 Lakhs
Talukas	3	8
Area	2190 sq.km	5815 sq.km.
Health Care Facilities	State Govt. Hospitals & Corporation Hospitals	State Govt. Hospitals
Private	Available	Available
VCTC	2	1
Combined Centers	6	3
PPTCT	5	1
care &Support(Govt)	2	0
Care &Support (Private)	8	0

4.9.1 VCTC Data Bangalore

Year	Cases Counseled and Tested	Positive	Percentage
2004(Urban)	4182	824	19.7%
2004 (Rural)	2597	681	26.2 %
Sentinel Surveillance Data of 2004	Urban ANC 1.0%		
	Urban FRU 1.75%		
	Rural ANC 1.0%		
	Rural FRU 2.75%		

In addition to the above VCTC and PPTCT facilities available in the govt. setups, PPTCT facilities also exist in private NGO setups.15 PPTCT centers exist under Freedom Foundation and 4 under Asha Foundation.

Though the population of Bangalore City is 65.37 Lakhs, persons accessing VCTC services are 30,426, which is less than 1 % of the population.

From the above reports & statistics, a huge gap of uncovered population exists, which is 98 % in the general population and 90 % in pregnant women. This unfilled gap has to be addressed. This population is

1. Either unaware of the existence of VCTC/PPTCT services at Govt. Health Care facilities. OR
2. Majority of this population access Private Health Care facility. This is a major health care provider in the state of Karnataka.

4.9.2 High-risk group in Urban Bangalore

The HRGS are CSWs (commercial sex workers), MSMs (men having sex with men) & Hizras (eunuchs.) This key population or the HRG group population seems to be quite high in Bangalore. According to HRG survey conducted by SWASTHI, an NGO through KASAPS Bangalore in urban areas of Karnataka, there are about 75,000 CSWs, MSM, and Eunuchs & injectable drug abusers. It is said that nearly half of this population is in urban Bangalore.Through them sexual activities are going on for commercial & pleasure purposes. Therefore, this population's health is important towards prevention of HIV/AIDS.

Action

1. For general population--By noting the above-mentioned facts& figures, Bangalore city population is not utilizing VCTC&PPTCT services fully. Therefore, BMP has to arrange IEC campaigns esp. in all slums concerning these services including ART services made available freely through KASAPS & to request KASAPS to upscale these services throughout Bangalore urban area.

2. For HRG group—for this, KASAPS & KHPT have taken up various activities through NGOs under targeted intervention programme towards HIV/AIDS control & reduction
3. Under BHCP, the HRG group care like opening of Dropin centers, opening of STD treatment centers like Programme clinics & Key clinics.
4. Creation of awareness, free supply & social marketing of male &female condoms through traditional & non-traditional outlets.
5. Opening of care & support centers in BMP area hospitals for the needy persons with help from KASAPS.
6. Promotion of voluntary blood donation activities through recognized blood banks.

4.10 RCH, FW & IMMUNIZATION

For combating population explosion in Bangalore city, its control through active voluntary family welfare activities is imminent nowadays. Therefore, all the hospitals under BMP must provide services concerning permanent methods of family planning like laproscopic sterilization, conventional tubectomy, & no scalpel vasectomy. These services must also include temporary methods of family planning like IUD (copper T), oral pills & male and female condoms. Provide these hospitals with trained manpower, necessary instruments & equipments through State Project Director RCH & from Central Health & FW services.

Under UIP activities, the planning & implementation must include sub-center outreach immunization services made available at least once a week in all urban slum areas. For these services, all six antigens /vaccines, ILRs, deep freezers & vaccine carriers will be provided through RCH services.

4.11 SUPERVISION FOR PROMOTION OF HEALTH ACTIVITIES

Record keeping & supervision has to be maintained with inbuilt evaluation techniques. For effective evaluation & promotion of these activities, monthly meetings have to be

conducted at sub-center or sub-ward Urban Health Centers, deputy Health Officer & Health Officer levels with correct and timely feed back.

4.12 BACKBONE OF BHCP

For the effective implementation of health services like preventive, promotive and rehabilitative services in BHCP area, establishment of primary health centers is an essential requirement. Primary health center concept is not new to India as it has been recommended by BHORE committee in 1946 which had given us the concept of PHC as a basic health unit for providing services as close to the people as possible. The Alma-Ata declaration of 1978 regarding health for all by 2000 A.D.has given us a philosophy of equity and a new approach i.e. primary health care approach.

With the same concept, establish urban health centers in each ward with a population of about fifty thousand so that these centers will deliver the goods concerning basic health services in all the wards of BMP.The functions of these urban health centers should cover all the eight essential elements of primary health care.

They are:

3. Medical care
4. RCH including Family Welfare and Immunization
5. Safe water supply and basic sanitation
6. Prevention and control of locally endemic diseases
7. Collection and reporting of vital statistics
8. Health education
9. Effective implementation of national health programmes
10. Referral services
11. Training of health workers, health assistants etc
12. Providing basic laboratory services

These urban PHCs have to be equipped with facilities for vasectomy, tubectomy, MTP services and in a phased manner voluntary HIV testing facilities for public and anti natal mothers.

Provision of experts / specialists services can also be provided in these primary health centers by attaching at least three U- PHCs to each of the medical colleges working in BHCP area as stated in Rome programme (reorient medical education.)

4.13 STAFFING PATTERN OF U-PHC

1. Medical officer	1
2. Lady medical officer	1
3. Junior pharmacist	1
4. Staff nurse	1
5. Block health educator	1
6. Health assistant senior (male) (health inspector)	1
7. Health assistant senior (female)(LHV)	1
8. SDC	1
9. Junior lab technician	1
10. Driver	1
11. Class IV (one female)	3

4.14 AT THE SUBCENTER LEVEL

Health worker (female-ANM)	3
(One ANM per 15 to 20.000 population)	
Health worker (male)	2
(One worker per 20 to 25,000 population)	

4.15 BUDGET REQUIREMENTS

1. Provision of 3 to 5 acres of land- as available in BHCP area

2. Construction of U-PHCs. (electricity, water supply,)	Rs. 40 lakhs.
3. Staff salary per year	Rs. 24 lakhs
4. Provision of vehicle including ambulance	Rs. 4 lakhs
5. O.E.-Maintenance and emergency drugs per year	Rs. 1.5 lakhs
6. P.O.L.per year	Rs. 30,000
7. Essential drug supply	Rs. 1 lakh
8. Purchase of equipments and furniture	Rs. 5 lakhs

4.16 QUARTERS

1. M.O.H. quarter	Rs. 25 lakhs
2. L.M.O.quarter	Rs. 25 lakhs
3. Para medicals (staff nurse, pharmacist)	Rs. 30 lakhs
4. Class IVth	Rs. 12 lakhs

4.17 SUB-CENTER LEVEL

1. Quarters for three A.N.M.s including sub-center clinic	60 lakhs each (20 lakhs each)

TOTAL NON-RECURRING EXPENDITURE **201 LAKHS**

(Land provision is free of cost from BMP/Govt.)

TOTAL RECURRING EXPENDITURE **25 LAKHS**

After taking into consideration presently available PHC, Dispensaries, veterinary homes and urban F.W.center"s buildings available in BMP area, the establishment of new P.H.C.s can be planned; as for example, 10 P.H.C.s per year according to the budgetary provision.

4.18 STRENGTHENING HEALTH DATA BASE (HMIS)

Health management & information system has to be created in BHCP, which provides information for monitoring & evaluation, which in turn helps in important decision-making. Here the WHO appreciates the formation of networks to promote exchange of information & experiences at the local, national, &t international levels through CITYNET, Metropolis.

4.19 STATUS ANALYSIS

Primary health care planning involves health planning, collection, compilation and interpretation of data to provide a clear picture on health care services needed by the community. The present management information system in the department of health is inadequate. There is lack of monitoring on data collection and performance evaluation in implementation of primary health care in BMP especially on statistics of morbidity and mortality.

Section 402 of KMC Act 1976 provides obligation on the part of medical practitioners to report dangerous and epidemic diseases such as Anthrax, Chickenpox, Cholera, Diphtheria, fever, Leprosy, Measles, Plague, Tuberculosis, Rabies and Smallpox. Doctors, hospitals or nursing homes however are not practicing this & they are not reporting to health authorities. The result is that the number of commonly occurring diseases like cholera, diphtheria, & tuberculosis, etc. are going unnoticed & unregistered in the health records.

5 INTER SECTORAL COLLABORATION IN BHCP

Department wise, following are the broad frameworks for inter-sectoral collaboration:

5.1 EDUCATION DEPARTMENT

a. Inclusion of important communicable &non-communicable diseases like HIV/AIDS, Malaria, Tuberculosis, Cardio-vascular diseases, Diabetes & cancer etc. in the syllabus of higher secondary schools, D.Ed, & B.Ed.
b. Conducting info-sessions & counseling for higher secondary & college students as part of their regular activities.
c. Celebration of World Health Day, World Population Day, World Aids Day etc. in their respective schools &colleges.
d. Sending healthy messages through health education flash cards from students to their families
e. Adoption of nearest slums for health education & overall development
f. Activities by respective schools &colleges through their NSS & NCC wings
g. Arranging Jathas, Prabhat Pherees for drawing attention of general community for particular health events

5.2MASS EDUCATION DEPARTMENT

a. Here, in adult education, through Preraks, & Upaprerks, health education activities can be taken up.
b. Inclusions of important health subjects like Family Welfare in the adult education syllabus.
c. Integration of important BHCP activities in the training programmes

5.3WOMAN AND CHILD DEVELOPMENT DEPARTMENT

a. Integration of health related BHCP activities in the curriculum of training of all categories of staff.
b. Awareness programmes in MCH activities for Stree Shakthi groups & self help groups
c. Referral of women & child to the appropriate services like ANC services, including VCTC, & PPTCT centers.
d. Rehabilitation of orphans
e. As Anganwadi workers are pillars of our MCH services, their services can be fully utilized in creating awareness about small family norms, immunization campaigns like Pulse-Polio, & Measles vaccination.
f. Priority for socially & economically deprived women in self-employment programmes.
g. State women's commission to take up the cause of women deprived of their right to property & livelihood & violation of rights of vulnerable women.
h. Health Insurance schemes for the socially & economically backward class in the slums including the girl child

5.4 LABOUR DEPARTMENT

a. To adopt workplace policy for non- discrimination, care & support at the work place
b. Regular awareness programmes in the work place & monitoring
c. Integration of BHCP activities for all categories of staff
d. Giving health insurance schemes to their employees

5.5 HOME DEPARTMENT

a. Integration in the training programme for all categories of staff in health related subjects like disaster management & on HIV/AIDS especially concerning ITPS act.

b. Protection of vulnerable groups-preventing trafficking in children & adolescent women

5.6 SOCIAL WELFARE AND BCM DEPARTMENT

a. Sensitization of staff about BHCP.

b. Awareness programmes for hostel inmates to protect themselves against abuse & sexual exploitations

5.7 INFORMATION AND PUBLICITY DEPARTMENT

a. Dissemination of information of BHCP in all their departmental programmes especially through exhibition, mass media programmes as part of their regular activities in BMP slums.

b. Health services available in BMP areas to publicize in all mass media regularly

5.8 REVENUE DEPARTMENT

a. Issue of proper ration cards for all needy slum dwellers

b. Prompt sanction of old age pensions

c. Regularly conducting meetings for the effective implementation of developmental activities in slum areas

5.9 DEPARTMENT OF HOUSING

a. Sensitization of all staff with regards to BHCP

b. Allotment of Ashraya & Ambedkar houses in BHCP area

5.10 DEPARTMENT OF URBAN DEVELOPMENT

a. Incorporating BHCP information through their SJSRY & other community outreach programmes

5.11 BANGALORE WATER SUPPLY AND SEWAGE BOARD

a. Rehabilitation of sewage lines & water pipelines-the gap between sewer & water main must be at least 3 meters. This work has to be done especially in all slum areas, & in areas where low-income groups reside.
b. Health education regarding storage and proper usage of water& open air defecation
c. Small sewage water treatment plants have to be established in selective areas
d. Ensuring water supply standards throughout the year
e. Proper chlorination of water

5.12 KARNATAKA SLUM CLEARANCE BOARD

a. Providing healthy atmosphere in all slums
b. Wherever possible, rehabilitation of slums

5.13 DIRECTORATE OF HEALTH &FW SERVICES

a. Providing training to BMP staff in all national health programmes
b. Helping BMP in controlling epidemics
c. Advise and necessary supply of equipments & materials pertaining to RCH
d. Effective implementation of PNDT&PFA act
e. Help & evaluation activity under MCH esp. Immunization & FW services

5.14 NGOS, MEDICAL COLLEGES & RENOWNED PUBLIC HEALTH INSTITUTIONS

a. BMP can think of handing over of urban PHCs to the willing NGOs& the Medical Colleges on grounds of public-private partnership according to the model already created by Health & FW department, Govt. of Karnataka
b. These institutions can be best utilized in health education activities esp. regarding sanitation, RCH, control of communicable & non-communicable diseases including HIV/AIDS
c. Taking up of research& evaluation studies in BHCP area

d. The services of voluntary organizations like IMA, Rotary, Lions, can be utilized in various health campaigns such as school health, polio eradication, universal immunization & FW programmes

5.15 ANIMAL HUSBANDRY AND VETERINARY DEPT

a. Training of the staff with regards to BHCP.
b. Actively involving their officers and staff towards the prevention of zoonotic diseases like Japanese Encephalitis and especially Rabies.
c. Active involvement in the prevention of bird flu-Saars.

5.16 RAJIV GANDHI HEALTH UNIVERSITY BANGALORE

a. Steps to be taken for including Urban Healthy City Project subject in the curriculum of Medical graduates.
b. Helping in implementation and in-built evaluation of BHCP with their experts.
c. Conducting workshops, seminars and Health education activities etc.. towards inter-sectoral co-operation and action.

5.17 SCHOOL HEALTH PROGRAMME

School health is an important component of BHCP. According to recent concepts, school health service is an economical & powerful means of raising community health, as today's school children are our future generation. School Health Service of course, is a personal health service. Now days with comprehensive school health service activity, quite a number of healthy messages can be conveyed to the family for healthy living.

School health programme launched during 1961 contains the following objectives.

1. The promotion of positive health
2. Prevention of diseases
3. Early diagnosis treatment, &follow-up of defects
4. Awakening health consciousness in children
5. Provision of healthy environment

Therefore, the BHCP has to cover-up the following aspects in its School Health Service

1. Health appraisal of school children & school personalle
2. Remedial measures & their follow up.
3. Prevention of communicable diseases
4. Healthy school environment
5. Nutritional services such as midday meals.
6. First aid & emergency care
7. Mental health
8. Dental health
9. Eye health (ophthalmic)
10. Health education
11. Education of handicapped children
12. Proper maintenance & use of school health records like cumulative health record

In comprehensive school health programme, the pupils have to be medically examined by qualified medical officers during 1st std. (school entry), 4th std. & 7th std. Every year cumulative health record must be opened for every pupil during 1st year, which can be carried on until 7th std. For every year, BMP has to provide these records without fail to all schools coming under their area during school reopening in the month of June. In this activity, the schoolteachers have to be trained by health personalle for recognizing the easy signs of defects in hearing, eye, speech in pupils including handicapped ones. Medical officers should examine such defective children carefully during their visit. After class teachers fill the simple health details in the cumulative records, the para-medicals like ANMs & male health workers have to visit the schools to record height, weight, etc in cumulative health records. Finally, the concerned area doctor has to visit the allotted school & examine 1st, 4th, & 7th std. pupils. If any defect is detected, the doctor, apart from providing treatment on the spot, must refer major defective children to needy higher centers & their follow up. For remaining standard pupils, any defect detected by their respective class teacher & para medicals & referred, the doctors have to examine these children.

5.17.1 Total school health programme

In selected most backward slum area schools, the total school health programme can be implemented from first std to seventh std. Every pupil from first std. to seventh std must compulsorily have a health check-up every year. Teachers & para medical staff must assist the designated medical officer during health check-ups. Apart from health check-ups & treatment of minor ailments, proper referrals & their follow-ups have to be carried out.

Under national blindness control programme, teachers have to be trained in detecting major defects in eyesight. Further, refractionists will examine such pupils, & finally ophthalmic specialists, so that simple defects like visual acuity can be corrected by spectacles. There is provision of free supply of spectacles to such children through Indian

Red Cross society & Joint Director Ophthalmic Services, Directorate of Health & FW Services.

5.17.2 Action under BHCP

1. Carry out enumeration of pupils every year, standard wise, school wise during the month of June through respective Health Center staff.
2. Supply of cumulative health records to all the primary schools by mid June every year.
3. Training & reorientation of primary school teachers regarding the filling up of their portion of cumulative health records.
4. Preparation & implementation of school wise health check up activity first by male & female health workers, followed by medical officer, duly filling cumulative health records.
5. Immunization activity plan against Diphtheria & Tetanus & its implementation
6. Identification of needy referral hospitals& referrals of needy defective children, & their further follow up. Open a separate register in all primary schools for this purpose.
7. Supply of school health drugs for minor ailments as recommended by Govt. of Karnataka/ India.

6 ROLE OF BMP/BHCP IN NATIONAL HEALTH PROGRAMMES TOWARDS HEALTH FOR ALL

6.1 NATIONAL ANTI-MALARIA PROGRAMME

a. 100% utilization of urban malaria schemes
b. EDPT activities- early detection & prompt treatment is one of the most important components towards effective malaria control. In this, all urban health centers & hospitals coming under BMP must conduct passive surveillance & malaria clinic activities. Under passive surveillance every health institute has to screen 15% of their new OPDs towards detection of malaria by drawing peripheral blood smears in the form of thick & thin blood smears & issuing prophylactic chloroquin tablets. These smears have to be examined in laboratories as soon as possible- within 7 days.
c. Prompt radical treatments according to national malaria guidelines have to be enforced (the time lag from the drawal of BS to 1st day RT should be within 10 days.)
d. In all urban PHC areas, every month, active malaria surveillance has to be carried out by health assistants. (1 to 2 % of population). They must submit these blood slides to laboratories minimum twice a week.
e. Proper maintenance of environmental sanitation particularly no unwanted water stagnation should be allowed in unwanted areas.
f. Effective implementation of anti larval measures for prevention of breeding of mosquitoes
g. Introducing bioenvironmental methods for the control of mosquito breeding in endemic & selective areas.
h. Fogging activities to be undertaken whenever necessary
i. Creation of fever treatment depots & drug distribution centers in needy slum areas on voluntary basis.

j. Overall health education activities to be taken up with help &guidance from Joint Director Malaria, & Filaria of Directorate of Health FW Services esp. with regards to personal protective measures against malaria. & role of citizens in avoiding stagnation of water.

Most of the anti mosquito activities carried out here are quite helpful towards control of filaria, Japanese encephalitis, dengue fever and chickun-gunya fever.

6.2 REPRODUCTIVE AND CHILD HEALTH PROGRAMME

These are the sub components of RCH programme

Family Planning	Child survival &safe motherhood component
Client approach to health care	Prevention/management of RTI/STD/AIDS

a. Every year during last month of financial year CNA has to be carried out by the involvement of local elected representatives, NGOs, good opinion leaders & WCD departments by respective health institutions to determine the targets towards the services of FW, immunization, nutritional supplements & detection of RTIs & STIs. Etc
b. Effective & proper implementation of FW, immunization & MCH services regularly
c. Going for a campaign approaches like pulse-polio measles immunization campaign & family health awareness campaigns
d. Care & service provision with regards to sterility for the needy couples
e. Adolescent health education activities concerning personal health care, prevention of RTIs & STIs including HIV.
f. Increasing male participation in RCH activities

g. Care & service provision for middle-aged & senior citizens towards cancer, diabetes & cardio-vascular diseases etc.
h. Here totally, care should be from Womb to Tomb

6.3 REVISED NATIONAL TUBERCULOSIS CONTROL PROGRAMME

The Government of India, WHO & World Bank together reviewed the NTP in the year 1992. Based on the findings, a revised strategy for NTP was evolved. The salient features of this strategy are:

1. Achievement of at least 85 % cure rate of infectious cases through supervised Short Course Chemotherapy involving peripheral health functionaries.
2. Augmentation of case finding activities through quality sputum microscopy to detect at least 70 % estimated cases; and
3. Involvement of NGOs; Information, Education and communication and improved operational research.

a. In this programme, BMP hospitals and Health Department have to coordinate in detection of open tuberculosis cases by minimum three sputum examinations in a designated microscopic center. There is one designated microscopic center per one lakh population.
b. Other forms of tuberculosis can be detected by laboratory investigation and lastly by x-ray.
c. After confirmation of sputum positivity, short course chemotherapy is given through DOTS (directly observed treatment short course). Here, the proper initiation of treatment & its continuation followed by completion of treatment's responsibility lies with health services, rather than with the patient. Therefore BMP health services have to take up this responsibility.
d. DOTS centers have to be established in every slum area run by trained para medicals & even by anganwadi workers & NGO volunteers.

e. Under RNTCP, NGOs can be identified for rendering all these services to the needy people with allocation of grants by government to these NGOs.
f. In RNTCP, the treatment is free for everyone-whether rich or poor.
g. Training of concerned medical officers & required staff can be carried out with help from Joint Director Tuberculosis & National Tuberculosis Institute Bangalore.
h. Joint Director TB Bangalore will supply the lab equipments like binocular microscope etc.

6.4 NATIONAL LEPROSY ERADICATION PROGRAMME

In this programme, the revised strategy is based on early detection of cases (by population surveys, school surveys, contact examination and voluntary referral), short-term multi-drug therapy, and health education, ulcer and deformity care and rehabilitation activities. The regimens recommended by WHO have been adopted to suit the operational and administrative requirements.

Now NLEP provides free domiciliary treatment in endemic districts through trained staff. In moderate to low endemic districts, it provides service through mobile leprosy treatment units & primary health care personnel. The treatment of leprosy is through multi drug regimen. Now in NLEP, the target is to bring down the prevalence rate to less than 1/10,000 population.

6.4.1 The Role of BMP Health Personnel

1. Horizontalization of leprosy programme through general health staff by imparting training to them.
2. As the prevalence rate has come down, instead of conducting surveys for leprosy detection, increase the voluntary reporting of suspected skin patch cases through vigorous IEC campaigns in all slums & needy areas.

3. Now as this programme's planning & action plan has already been drawn by govt. health department, the BMP has to implement it thoroughly through its health staff.
4. MDT drugs & other needy help have to be sought from DHO/Dist. Leprosy Officer & Joint Director Leprosy, Dept. of H.F.W.
5. Speedy action in awarding pension to leprosy handicapped personnel
6. Provision of MDT drugs in all the BMP hospitals & urban health centers & even at sub-centers.

6.5 IODINE DEFICIENCY DISORDERS (IDD)

This programme was started during 1962 as Goiter Control Programme based on supply of iodized salt. In this part even though the prevalence of IDDs is low, we have to implement it effectively as it affects females during adolescence & pregnancy.

Therefore in BMP areas only iodized salt must be supplied to the market. The BMP has to do IEC campaigns for popularizing iodized salt intake. Here the food inspectors can play a pivotal role.

6.6 UNIVERSAL IMMUNIZATION PROGRAMME

Small pox eradication has already shown us that immunization is the most powerful & cost effective weapon against vaccine preventable diseases. Therefore BMP health system must include routine immunization activities as explained in RCH section.

Apart from routine immunization under universal child immunization, take up introduction of **Hepatitis B vaccine**, **Urban Measles Campaign, &** Neonatal **Tetanus Elimination** activities in all slum areas through urban health centers.

6.7 NATIONAL SURVEILLANCE PROGRAMME FOR COMMUNICABLE DISEASES

This programme was launched during 1994 due to the outbreak of plague (1994), malaria, (1995), and dengue (1996).

Under this programme, BMP has to strengthen surveillance system by training medical and para-medical personnel, dissemination of technical information, and upgradation of laboratories & modernization of communication & data processing systems. This also includes IEC campaigns for promoting community participation in the prevention & control of outbreaks.

Diseases like Malaria, Filaria, Sars, Dengue, Japanese Encephalitis Chikun-gunya, Tuberculosis, Leprosy, GE, Cholera, Infective Hepatitis & Enteric Fever etc. have to be included under this surveillance programme.

6.8 OTHER MAJOR ROLES FOR BMP

1. **National Cancer Control Programme**
2. **National Mental Health Programme**
3. **National Diabetes Control Programme**
4. **Minimum Needs Programme**
5. **National Water Supply and Sanitation Programme**

6.9 RABIES

Rabies is primarily a zoonotic disease of warm-blooded animals such as dogs, cats, jackals, and wolves. It is transmitted to man by bite or licks of rabid animals. In BMP area, stray dog population is on the rise. As this viral disease is acute and fatal, BMP, Health Department and Veterinary Department have to play a major role towards prevention of this disease.

Rabies is seen in three epidemiological forms.

1. Urban rabies.
2. Wild-life rabies.
3. Bat rabies. Here, we are more concerned about urban rabies.

6.9.1 Prevention of rabies

Rabies can be prevented by proper vaccination, apart from taking care of injuries by the dog bite. There are three major types of vaccines in use.

1. Nervous tissue vaccine
2. Duck embryo vaccine
3. Cell culture vaccine.

Prevention of human rabies is as follows.

1. Post exposure prophylaxis.
2. Free exposure prophylaxis.
3. Post exposure treatment of persons who have been vaccinated previously.

6.9.2 Rabies in dogs

Manifestations of rabies in dogs are of two types.1. Furious rabies.2.Dumb rabies.
Immunization of dogs: veterinary department can take this up. Prophylactic vaccination of dogs is one of the important weapons in rabies control.

6.9.3 Control of rabies in BMP area

1. Elimination of stray and ownerless dogs.
2. Mass immunization of dogs in the shortest possible time.
3. Registration and licensing of all domestic dogs
4. Restraint of dogs in public places
5. Destruction of dogs bitten by rabid animals

6. Quarantining of imported dogs
7. Health education of public about care of dogs and prevention of rabies.

6.10 GERIATRIC CARE IN BHCP AREA

Improvement and new discoveries in medical science and satisfactory social condition have shown increased life span. Now a days the number of people living above 70 years has increased. These trends are appearing in developing countries like India where medical and social services are well developed and standard of living is high. In India according to 2001 census, 7 to 8 % of total population was above 60 years. This population is also of considerable importance.

Main problems due to aging process in health are

1. Senile cataract
2. Glaucoma
3. Nerve deafness
4. Bony changes affecting mobility
5. Failure of special senses
6. Emphysema
7. Changes in mental outlook

Apart from these, there are problems associated with long-term illness like

1. Degenerative diseases of heart and blood vessels.
2. Cancer
3. Accidents
4. Diabetes
5. Diseases of loco motor systems
6. Respiratory illness
7. Genitourinary system

Along with these illnesses, psychological problems like mental changes, sexual adjustment and emotional disorders may create troubles in peaceful living.

By considering the above-mentioned facts, old-age homes have to be established in BMP area wherein the facilities are made available concerning above-mentioned problems of geriatrics. Therefore, it has been opined to establish old-age homes in BMP area at the rate of one old age home per 20 wards.

In a phased manner, much care can be bestowed to old people by social welfare measures like national assistance, supplementary pension, home care services, meals on wheels services, sitters of service and provision of services of health visitors.

6.11 CARE OF CHILDREN IN BMP AREA UNDER BHCP

Apart from taking full health care under R.C.H.programme, we have to give importance towards care of orphans and street children in BMP area. Several groups have documented the risk that street children are in, but interventions are very patchy in nature. Bangalore is estimated to have about one lakh street children (DAPPreport-1998). At present, no such surveys are conducted in Bangalore area. Now this number seems to have increased especially due to HIV/AIDS infection.

For taking care of these children, we have to plan regarding child placement measures such as orphanages, foster homes, adoptions, borstals and remand homes with help from social welfare, women and child welfare departments.

6.12 CARE OF DISABLED AND HANDICAPPED IN BHCP

Such persons need rehabilitation, which should concentrate as follows:

1. Medical rehabilitation—towards restoration of function
2. Vocational rehabilitation—giving a capacity to earn their livelihood
3. Social rehabilitation—provision of family and social relationships
4. Psychological rehabilitation—provision of personal dignity and confidence

Considering all the above-mentioned facts, rehabilitation can be achieved with help from tertiary, government and private hospitals and the concerned departments.

6.13 CAMPAIGN MODE ACTIVITIES IN BHCP AREAS

The following are the campaign mode activities, which can be taken up.

i. Presently ongoing pulse polio activity

ii. Campaign with regards to measles vaccination

iii. School health campaign

iv. Family welfare activities with regards to permanent and temporary activities

v. First aid teaching campaigns

vi. Once a month free health check up campaigns in all slum areas.

vii. Health check up campaign of all food handlers in the city.

iii. Voluntary blood donation campaigns

ix. Vehicular pollution control campaigns

x. Environmental sanitation campaigns

xi. Observance and campaign activities concerning important health days like World AIDS Day, WHO Day, Voluntary Blood Donation Day, Anti Leprosy Day, Tuberculosis Control Day etc.

xii. IEC campaigns for creating awareness and utilization of services concerning HIV/AIDS, MCH services, immunization, FW services and prevention and treatment of communicable and non-communicable diseases, and population control. Awareness concerning PNDT, child marriage and abuse of female children.

xiii. IEC activities regarding prevention of Rabies have to be taken up rigorously in all the BHCP areas.

7 DISASTER MANAGEMENT

Now a day, this subject is becoming very important in health sector & in other sectors. Disasters may be natural, or man made. In disaster management, a stitch in time saves nine principal has to be applied.

A "disaster" can be defined as "any occurrence that causes damage, ecological disruption, loss of human life or deterioration of health and health services on a scale sufficient to warrant an extraordinary response from outside the affected community or area".

A "hazard" can be defined as any phenomenon that has the potential to cause disruption or damage to people and their environment".

Emergencies and disasters do not only affect health and well being of people; but frequently, large number of people are displaced, killed,injured, or subjected to greater risk of epidemics. There may be considerable economic harm to the existing infrastructure and may threaten the future of sustainable development.

There are many types of disasters such as earthquakes, cyclones, floods, tidal waves, land slides, volcanic eruptions, tornadoes, fires, hurricanes, snow storms, severe air pollution (smog), heat waves, famines, epidemics, building collapse, toxicological accidents (e.g. release of hazardous substances), nuclear accidents, and warfare etc. Terrorism is a recent addition to the list. Terrorism and warfare are a special category, because damage is the intended goal of action. Every catastrophic event has its own special features. Some can be predicted several hours or days beforehand, as in the case of cyclones or floods, others such as earthquakes or acts of terror occur without warning.

The morbidity, which can occur from disasters, is of four types.

1. Injuries
2. Emotional stress
3. Disease epidemics
4. Increase in indigenous diseases

7.1 DISASTER MANAGEMENT TYPES

There are three aspects of disaster management.

1. Disaster response
2. Disaster preparedness
3. Disaster mitigation

7.2 DISASTER RESPONSE

The following are the components of disaster response.

1. Search, rescue, and first aid.
2. Field care
3. Triage
4. Tagging
5. Identification of dead
6. Relief phase
7. Epidemiological disease surveillance and their control
8. Vaccination
9. Nutrition
10. Rehabilitation
11. Water supply
12. Food safety
13. Basic sanitation and personal hygiene
14. Vector control

7.3 DISASTER MITIGATION IN HEALTH SECTOR

This involves measures designed to prevent health hazards from causing or to lessen the likely effects of emergencies. These measures are flood mitigation works, appropriate land use planning, improved building codes, and protection of vulnerable population and

structures. Medical casualties can be reduced by improvement in the structural quality of houses, schools and other public and private buildings.

7.4 DISASTER PREPAREDNESS

It is an ongoing multisectoral activity such as:

8. Evaluate the risk of the particular region to disaster;
9. Adopt standards and regulations;
10. Organize communication, information and warning systems
11. Ensure coordination and response mechanisms
12. Adopt measures to ensure that financial and other resources are available for increased readiness and can be mobilized in disaster situation;
13. Develop public education programmes;
14. Coordinate information sessions with news media; and
15. Organize disaster simulation exercises that test response mechanisms.

In BHCP area, the following natural disasters can be expected:

7.5 A. NATURAL DISASTERS

1. **Flooding of low-lying areas due to heavy rains;**
2. **Earthquakes.**

7.6 B. MAN MADE DISASTERS

1. **Terrorism**
2. **Major train and vehicular accidents**
3. **Aviation accidents**
4. **Building collapse**
5. **Fire accidents**
6. **Factory accidents**

7. **Communicable disease epidemics**
8. **Air and water pollution**

Therefore in BHCP, disaster management committee should be formed which must have medical experts, administrators, statisticians, and all government sectors including NGOs, military, and paramilitary sectors. For disaster management, trauma and emergency care centers should be established with assistance from state and central governments in selective areas of BMP. For its management, separate financial arrangements have to be made permanently.

8 HEALTH RELATED ENVIRONMENTAL FACTORS

The following are the key environmental health factors.

1. **Air pollution**
2. **Noise pollution**
3. **Water pollution**
4. **Solid waste management**
5. **Food adulteration and food hygiene**

9.1 AIR POLLUTION

Air is a mechanical mixture of gases. In BMC area, air pollution is occurring due to motor vehicles. During 2004, there were about 1.9 million registered motor vehicles in Bangalore.The number of two wheelers was 1.43 million, cars 0.29 million, auto rickshaws 73,571, and 2100 city transport buses.. Therefore, air pollution is due to a large number of vehicles (many poorly maintained), and industries and workshops around Bangalore, and the lead content in petrol.

The dangerous air pollutants are lead, sulpur dioxide and suspended particulate matter. Lead causes various health hazards in children, like growth defects. It is harmful to pregnant women, it may damage brain, kidney, reproductive system and also may cause anemia by affecting RBCs. Its symptoms are headaches, tremors, sleeplessness, muscle and joint pain, loss of appetite, nausea, irritability and chronic fatigue.
Suspended particulate matter and sulphur dioxide released by vehicles and industries may cause respiratory problems including difficulty in breathing.

Proposals for improvement:

1. Changing to CNGs
2. Improving vehicle utilization factor
3. Providing unleaded petrol

4. Establishment of pollution monitoring stations
5. Control over industrial emissions
6. Establishment of green belts
7. Legislation- to decrease air pollution, govt. of India has enacted, The Air Act in 1981 (prevention and control of pollution)

9.2 NOISE POLLUTION

It has been defined as wrong sound in the wrong place at the wrong time. Therefore, the twentieth century has been described as the century of noise, which is an important stress factor in environment.

Health hazards due to noise exposure are

1. Auditory effects:
    a. -Auditory fatigue,
    b. - Deafness
2. Non-auditory effects:
    c. - Interference with speech.
    d. - Annoyance.
    e. - Decreasing efficiency
    f. - Physiological changes
    g. - Noise is a significant factor in economic losses.

The normal conversation produces a noise of 60-65 decibels and a daily exposure up to 85 decibels can be tolerated without any kind of damage to auditory organs. Permanent deafness can occur by repeated exposure to noise around 100 decibels. Exposure to above 160 decibels might cause deafness by the rupture of tympanic membrane.

Proposals for improvement:

1. Planning of cities
2. Control of vehicles
3. To improve acoustic insulation of building
4. Control over industries and railways noises

5. Protection of exposed persons in industries
6. Legislation
7. Health education

9.3 WATER POLLUTION

Water contains impurities of two kinds.1-natural 2- man-made a more serious among these two is man-made impurities. water pollution here is caused by hum an activity—urbanization and industrialization.

Water borne diseases are of two types.

a. Biological

b. **Chemical**

9.3.1 Biological (water-borne diseases)

1. Those caused by the presence of an infective agent:
    a. Viral: viral hepatitis A, hepatitis E, poliomyelitis, and rotavirus diarrhea in infants
    b. Typhoid and paratyphoid fever, bacillary dysentery, esch. coli diarrhea, cholera
    c. Protozoal: amobeiasis, giardiasis
    d. Helminthic: roundworm, threadworm, hydatid disease.
    e. Leptospiral: Weil's disease
2. Those due to the presence of aquatic host:
    a. Snail: schistosomiasis
    b. Cyclops: guinea worm, fish tape worm

9.3.2 Chemical

This contamination is not a major problem in BMP area.

Contamination of water takes place due to leakages in water and sewage pipes, defective service reservoirs, damages in taps. According to statistics from the state pollution control board, about 40% of houses in the city, contributing 25-30% of sewage have no access to underground drainage in uncovered layouts, low-income localities and slums.

For the potability of water, bacteriological quality of drinking water must be as follows.

Bacteriological quality of drinking water

Organisms	Guideline value
All water intended for drinking E.coli or thrmotolerant coliform bacteria	Must not be detectable in any 100ml sample
Treated water entering the distribution system E-coli or thermo tolerant coliform bacteria Total coliform bacteria	Must not be detectable in any 100ml sample Must not be detectable in any 100ml sample In case of large supplies, where sufficient samples are examined, must not be present in 95% of samples taken throughout any 12-month period.

Proposals for improvement

1. Rehabilitation of sewage lines and water pipes especially in slums. It must be ensured by the BWSSB that the gap between the sewer and the water main is at least 3 meters.
2. Sewage water should not be let into streams without being treated
3. Cleaning and covering of storm water drains
4. Ensuring water quality standards as mentioned in the above table
5. BWSSB to ensure provision and functioning of water chlorinators within the city for achieving proper residual chlorine levels.
6. Health education in slum areas concerning collection and storage of water.

9.4 SOLID WASTE MANAGEMENT

9.4.1 Situation Analysis

1. Average per capita generation of waste is about 1.08-kg.per capita per day. (It may be an underestimated figure.)
2. According to pollution control board, the present system of collection, transport and disposal of garbage is inadequate.
3. If solid waste if allowed to accumulate, it causes health hazards like
    d. Fly breeding due to decomposition.
    e. Attracts rodents.
    f. The pathogens present in this may be conveyed back to the food of human beings through flies and dust.
    g. Pollution of water and soil.
    h. Unsightly appearance and nuisance.

4. The total garbage collected is estimated to be 2282 tons per day. Green waste accounts for 889 tpd
5. About 330 trucks are employed for its transportation.
6. Bio-medical waste is about 800 tpd, and is collected separately by a private agency, which is then disposed by incineration.
7. Garbage is transported through open trucks.
8. Only 22 % of solid waste is being utilized for composting.
9. In public private partnership, N.G.O.participation like "Swacha Bangalore" and "Suchi Mitras" are functioning.

9.4.2 Plan Proposals

b. The scientific analysis and quantification of solid waste generated and collected is to be taken-up.
c. Collection—the environmental hygiene committee 1949 recommends that the local bodies should arrange for collection of refuse, not only from public bins, but also from individual houses. The open refuse trucks should be replaced by enclosed vans. The best one being the Dustless Refuse Collector, which has totally enclosed body.
d. Storage – Galvanized Steel Dustbins with close fitting covers and with polyethylene receptacles are preferred for households. For bulk producers, large capacity bins may be used.
e. Introducing mechanical sweeping and collection of garbage.
f. Innovative ways of disposing non-bio-degradable wastes like plastics in laying city roads.

9.4.3 Methods of disposal

a. Composting through KCDC. Thus, the produced manure can be marketed.
b. Wherever necessary, controlled tipping or sanitary landfill can be taken-up.

9.5 FOOD ADULTERATION AND FOOD HYGIENE

Food adulteration has already been dealt with in detail

The WHO has defined food hygiene as all conditions and measures that are necessary during the production, processing, storage, distribution and preparation of food to ensure that it is safe, sound, wholesome and fit for human consumption. The declaration of Alma-Ata considered food safety as an essential component of primary health care.

9.5.1 Food handling

1. Data of street vendors: These vendors have to be identified, if possible with registration. At present, this data is not available with BMP.
2. Regular inspection of hotels and restaurants, fruit and food vendors. This inspection has to given importance foe preventing epidemics of food borne diseases.
3. Education and health check-up of food handlers: This category has to be trained through Hotel Owners Association with help from govt. and non-govt. organizations like IMA etc.This work can also be allotted to respective urban health centers, medical officers and para medicals.
4. Awarding certificates: The certification scheme for restaurants, road side vendors and food handlers who adopt adequate hygienic measures can be introduced and well publicized.
5. Health education of consumers: This can be taken up as a campaign mode of activity through print media, cinema slides, and cable networks. For this, respective urban health center's medical officers can conduct small group meetings with opinion leaders in all slums. this activity can be taken up in all primary and secondary schools so that children can carry this message to their parents and other family members.

9.5.2 Milk Hygiene

Milk is also an efficient vehicle for transmission of a large number of diseases. The sources of contamination may be

1. Diary animal
2. Human handlers
3. Environment such as contaminated vessels, polluted water, flies, and dust.

Healthy proposals for safe milk

1. Healthy and clean animal: this can be achieved by regular inspection of animals by veterinary doctors.
2. The premises where the animal is housed and milked must be sanitary.

3. Clean, sterile and covered milk vessels.
4. Potable water supply
5. Personal hygiene of milk handlers: milk handlers and milking men must be free from any communicable diseases
6. Wherever possible, milking machines can be used.
7. Formation of milk supply unions, especially with involvement from "Stree Shakti"
8. Pasteurization of milk: This can be taken up on a large scale by government. through Nandini milk supply activities.

9.5.3 Meat and poultry

According to Karnataka Meat and Poultry Marketing Corporation Ltd, five lakh sheep and goats, and 25 thousand pigs and bullocks are slaughtered in Bangalore city every year. The unofficial slaughter figures may be 3-4 times higher than the given number. At present, there is no control over illegal slaughtering. Unhygienically handled meat can cause several diseases.

Poultry distribution and sale is also not so satisfactory that the birds are bought and distributed to poultry vendors live and cut on the point of sale. There is no regulation for keeping the birds before slaughtering. The by-laws are not enforced strictly. These birds hygiene and their handlers health is very important especially with regards to recent epidemics of Sars.

9.5.4 Proposal for healthy meat plan

Establishment of modern slaughterhouses: The following minimum standards for slaughterhouses have been suggested under Model Public Health Act (1955) in India.

1. Location: Preferably away from residential areas.
2. Structure: Floors and walls up to 3 feet should be impervious.

3. Disposal of waste: Blood and discarded organs must not be discharged into public sewers, but must be collected separately.
4. Independent, adequate and continuous water supply is necessary.
5. Examination of animals: Antemortem and postmortem examination by a veterinary doctor
6. Cold storage facility
7. Transportation of meat: It should be transported in fly proof covered van.
8. Health education: Meat handlers and consumers have to be health educated about meat hygiene.

Certification schemes: Standards already in place for the sale of meat must be strictly enforced. In addition, for creating healthy competition, certification activities can be taken up.

9 STRENGTHENING OF BHCP

1. For effective implementation and inbuilt evaluation, it is suggested to appoint an experienced consultant with public health specialization for getting suggestions and expert opinion for any type of health related problems and also for smooth running of BHCP to reach health for all on primary health care grounds by 2010.
2. At the grass root level especially in slum areas, link workers preferably, females, one worker per slum can be appointed as a bridge between health workers and general population. These link workers have to be selected from respective areas only with an honorarium of rupees one thousand per month. They must be literate and popular, acceptable by all communities in that area.
3. Try to find out national and international agencies for assisting BHCP either financially or in any other form.
4. Seeking financial assistance from central government in urban development areas.
5. For avoiding over crowding in BMP area, permit satellite townships with all urban amenities.
6. For creating healthy competition among the urban PHCs, introduction of awards, promotions can be given a thought.

Along with monthly review of BHCP, health related sectors review also to be considered on priority.

9.1 ADMINISTRATIVE ASPECTS OF B.H.C.P

For smooth running of BHCP activities, trust formation is suggested in which Mayor will act as honorary chairman and commissioner of BMP will be executive chairman. Trust members will include top officials of health, and its related other department officials, which may also include top ranking N.G.O.s and private hospitals and health related bodies like State I.M.A.

For execution of BHCP work, an executive committee has been suggested under the chairmanship of Commissioner BMP, which will be a non-political body, comprising ten to fifteen members.

10 EVALUATION OF BHCP

The process of interlinking health to environmental conditions, collection of information, setting of priorities, acting accordingly etc, are considered as a balancing act in producing Healthy City Projects, which need the knowledge, skills, and understanding of inter-sect oral partners. As healthy City Projects are still in infancy in developing countries, there are very few evaluations. The late 1980s and1990s have seen much of discussions and debates concerning evaluations in national and international public health field. Some of these debates and discussions have given the idea of measuring the burden of diseases. The evaluation is a process, which attempts to determine as systematically, and objectively as possible, the relevance, effectiveness, adequacy, efficiency and/or impact of activities in the light of predetermined objectives. (WHO 1981) With regards to Healthy City Projects Evaluation, the following are considered as important indicators.

1. Inputs
2. Process
3. Outputs
4. Outcomes
5. Impact

10.1 SELECTED INDICATORS FOR EVALUATION OF HEALTHY CITY PROJECTS

10.1.1 Driving Force and Pressure Indicators

- Urban poverty level
- Crude birth and death rates
- Literacy level, female and male
- Primary and secondary school enrolment rates
- Employment rates
- Average income levels and distribution
- Crime rate

- Atmospheric emissions (industry and traffic) heavy metals, gases, particulates
- Road traffic volumes and densities
- Untreated affluent
- Hazardous medical waste products
- Amount of household waste not collected
- Number of illegal dump sites
- Electrification coverage
- Accidental release of toxic chemicals
- Indoor-outdoor air quality meet WHO standards
- Annual average visibility
- Water quality (drinking water quality standards met)
- Food quality (ex: microbiological and chemical, pesticide residues)
- Heavy metals in air, water, solid, dust and food
- Crowding /living space
- Green spaces (surface area), distribution
- Community perceptions of environmental quality
- Noise levels

10.1.2 Exposure Indicators

Proportion of the population with

- Safe drinking water (in home or 15 minutes walking distance)
- Access to regular garbage removal system
- Homes connected to a water supply system
- Substandard housing
- Overcrowded homes
- Informal (makeshift) housing
- No shelter (homeless)
- Homes connected to electricity supply
- Homes using bio-mass/coal for cooking/ heating/lighting

10.1.3 Impact Indicators

- Crude death rates
- Infant mortality rate
- Neonatal, postnatal mortality
- Life expectancy at birth
- Cause specific death rates (ex: deaths from diarrhea, respiratory infection, asthama, traffic accidents etc)
- Low birth weight babies
- Prevalence/incidence—respiratory related diseases, diarrhea related diseases, parasitic infectious diseases, cardiovascular diseases, skin infections, mental ill health, work related and traffic related accidents

10.1.4 Process Indicators

- Existence of local environmental health policy and action plan
- Existence of local healthy public policies which address environmental health issues
- Existence of health/environmental health policies in urban planning, housing, transport and other sectors
- Existence of emergency preparedness plans
- Existence of joint planning initiatives
- Urban renewal initiatives, settlement upgrading programmes
- Local standards/guidelines/legislation for food, air, water, hazardous substances, impact assessments, housing etc

10.2 MONITORING AND SURVEILLANCE

- Existence of monitoring and surveillance system for environmental (ex: air, water) quality and food quality
- Existence of environmental health and health services information systems (with capacity for linkage)

- Capacity to track sentinel environmental diseases
- Capacity to track inequalities in environmental health status (age, gender, socio-economic status etc)

10.3 SERVICE DELIVERY

- Organization restructuring to integrate health and environment in decision making
- Environmental health officers per 10,000 population/district
- Proportion of health personnel working in slum areas, informal sector, low income areas
- Proportion of population with access to environmental health services
- Decentralization of decision making structures
- Integrated service delivery mechanisms
- Immunization coverage rates
- Availability and accessibility of primary health care services
- Orientation towards preventive health services
- Emergency services
- Existence of supportive governmental structures at regional and national level

10.4 BUDGETING AND FINANCES

- Proportion of local city budget spent on health
- Proportion of local health budget spent on environmental health
- Sources of finances for environmental health
- Actions taken to mobilize additional resources for environmental health

10.5 CAPACITY DEVELOPMENT

- City health education/health promotion programmes

- Food producers, handlers, sellers (including venders) trained in basic food hygiene
- School education programmes in environmental health
- Ongoing environmental health/hygiene training programmes for environmental health officers, assistants, nurses, community health workers, engineers, planners, community groups in topics related to water and sanitation, waste disposal, vector control, food safety and chemical safety
- Career structures for environmental health personnel

10.6 COMMUNITY PARTICIPATION

- Mechanisms to involve stake holders in decision making/policy development (ex: formation of inter sectoral steering committee)
- Joint planning initiatives (ex: workshops, meetings held, stake holder participation etc)
- Women represented in planning and implementation of programmes and projects
- End-user participation in project formulation
- Communication networks for environmental health
- Existence of systems for dissemination of public information
- Inventories of environmental health organizations

Source: Adapted from WHO (1996d)

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